

نماذج القيادة الريادية في المراكز العلمية — كيف يُحوّل تبني
التفكير الريادي إدارة المراكز العلمية ويعزز استدامتها | دراسة
تطبيقية على مركز مشكاة التفاعلي

**Entrepreneurial Leadership Models in Science Centers —
How adopting entrepreneurial thinking transforms
science center management and sustainability | An
Applied Study on Mishkat Interactive Center**

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Introduction

Science centers have long served as a bridge between scientific knowledge and public understanding, fostering curiosity, creativity, and a culture of lifelong learning. Yet in an era defined by rapid technological advancement, shifting visitor expectations, and increasing entertainment demand, the traditional management models governing these institutions are being fundamentally challenged. The question is no longer simply how to educate — but how to lead, innovate, and most importantly sustain.

The concept of entrepreneurial leadership has emerged as a compelling response to this challenge. Rooted in the principles of opportunity recognition, risk-taking, innovation, and value creation, entrepreneurial leadership has historically been associated with the business world. However, its principles are increasingly being applied to non-profit and educational institutions seeking to remain relevant, impactful, and financially viable in a highly competitive landscape. Science centers, by their very nature, are spaces of exploration and unconstrained discovery — making them uniquely positioned to embrace entrepreneurial thinking not just in their programming, but in their leadership and organizational culture. The intersection of creative learning environments and entrepreneurial management models represents a largely underexplored area of academic inquiry, particularly within the Arab world.

This research was motivated by a dual purpose: a professional immersion in the field of creative learning as a practitioner within a science center, and an academic pursuit of understanding how leadership models can be reimaged to drive institutional transformation. The researcher's direct experience at Mishkat Interactive Center provided both the inspiration and the practical lens through which this study was conceived. Historically, science centers evolved from natural history museums and world exhibitions of the 19th century, gradually shifting toward interactive and participatory experiences throughout the 20th century. This evolution demanded not only a change in programming philosophy, but a fundamental rethinking of institutional leadership — one that is agile, innovative, and entrepreneurially minded.

Against this backdrop, this study seeks to examine how entrepreneurial leadership models can transform science center management and sustainability, using Mishkat Interactive Center as an applied case study — contributing to a growing body of knowledge at the crossroads of educational leadership and entrepreneurial thinking.

1. Research Problem

Despite their critical role in advancing scientific literacy and public engagement, science centers around the world face mounting institutional pressures — from declining public funding and rising operational costs, to intensifying competition from digital entertainment platforms and evolving visitor expectations. Traditional management approaches, often

bureaucratic and program-driven, have proven increasingly insufficient in addressing these complex and dynamic challenges.

In the Arab world, and within the Saudi context specifically, science centers are at a pivotal crossroads. While national agendas such as Vision 2030 have amplified the demand for knowledge-based institutions and innovation-driven environments, there remains a significant gap in leadership frameworks that can translate this ambition into sustainable institutional practice.

This research identifies a critical problem: **the absence of clearly defined entrepreneurial leadership models tailored to science centers**, and the limited understanding of how such models can practically transform management structures and long-term sustainability. Mishkat Interactive Center serves as the focal applied case through which this problem is examined.

2. Significance of the Study

This study holds significance on multiple levels:

Academically, it contributes to a largely underexplored area at the intersection of entrepreneurial leadership theory and informal education management — particularly within the Arab academic landscape.

Practically, it offers science center leaders, policymakers, and educational administrators actionable insights into leadership transformation, providing a replicable framework for similar institutions.

Nationally, it aligns with Saudi Arabia's Vision 2030 objectives of fostering innovation, entrepreneurship, and a knowledge-driven economy — positioning science centers as active contributors to this transformation.

Institutionally, the findings directly serve Mishkat Interactive Center as an evidence-based foundation for leadership and strategic development.

3. Research Questions

This study is guided by the following central question:

How can entrepreneurial leadership models transform the management and sustainability of science centers?

This is further explored through the following sub-questions:

1. What are the defining characteristics of entrepreneurial leadership models applicable to science centers?
2. To what extent does current leadership practice at Mishkat Interactive Center reflect entrepreneurial thinking?
3. What are the key institutional barriers to adopting entrepreneurial leadership in science centers?
4. How does entrepreneurial leadership influence the financial sustainability and programmatic innovation of science centers?
5. What leadership framework can be proposed to guide science centers toward entrepreneurial transformation?

4. Theoretical Foundations

This study draws upon the following theoretical frameworks:

Entrepreneurial Leadership Theory — building on the works of Gupta et al. (2004) and Ireland et al. (2003), which define entrepreneurial leadership as the ability to influence others to manage resources strategically in order to pursue opportunities.

Institutional Theory — examining how organizational structures, norms, and external pressures shape leadership behavior within non-profit and educational institutions.

Transformational Leadership Theory — exploring how visionary leadership drives organizational change, innovation, and follower motivation in complex environments.

Sustainability and Social Enterprise Frameworks — drawing on models of hybrid organizations that balance mission-driven purpose with entrepreneurial revenue strategies.

Informal Learning Theory — grounding the study in the unique educational context of science centers as experiential, non-formal learning environments.

5. Research Methodology

This study adopts a **qualitative case study approach**, selected for its suitability in exploring complex, context-dependent phenomena within a real-world institutional setting.

Case Study: Mishkat Interactive Center, Riyadh, Saudi Arabia

Data Collection Methods:

- Semi-structured interviews with leadership, management, and program teams at Mishkat Interactive Center
- Document analysis of institutional strategies, annual reports, and program frameworks

- Observational field notes from within the institutional environment

Data Analysis:

- Thematic analysis using an inductive coding approach
- Cross-referencing emerging themes with established theoretical frameworks

Ethical Considerations: All participants will be engaged with informed consent, and data will be treated with full confidentiality and academic integrity.

6. Conclusion

This research stands at a meaningful intersection — between the science of leadership and the art of learning. As science centers navigate an increasingly complex institutional landscape, the need for adaptive, entrepreneurial, and visionary leadership has never been greater. By examining Mishkat Interactive Center as a living case study, this research aspires to move beyond theoretical abstraction and offer a grounded, practical contribution to the field.

The findings are intended not only to inform the future of Mishkat, but to offer a transferable model for science centers across the Arab world — institutions that are uniquely positioned to become engines of innovation, creativity, and sustainable impact in the knowledge economies of tomorrow.

7. Suggested References and Sources

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